The effect of Metformin on the improvement of ischemic stroke complications

Abstract

Background and Objectives: Stroke is the third most common cause of death in the United States and the most commonly diagnosed neurological disorder. About 750,000 strokes occur annually in the United States and about 150,000 people die as a result of stroke the incidence of stroke increases with age. Due to the protective effects of metformin in preventing secondary damage and there has not been much work in the world, the objective of this randomized, double-blind clinical trial is evaluation of the effect of Metformin on complication of ischemic strokes.

Methods: In this study, 100 patients with ischemic stroke will be assigned into the study randomly and the subjects will be divided into two groups A and B randomly. Inclusion criteria of the study is Ischemic stroke patients and focal neurological symptoms. Exclusion criteria of the study is intracerebral hemorrhage (ICH); Subarachnoid hemorrhage (SAH); subdural hematoma (SDH); hypoglycemia; contraindications for metformin use; diabetic patients; venous sinus thrombosis and drug side effects. The National Institutes of Health Stroke Scale (NIHSS) will be used to evaluate the clinical manifestations of ischemic stroke. The two groups will be followed up for 3 months. Metformin 500 mg twice in a day will be administered for seven days for group (A) and placebo will be administered for seven days for group (B). Blood glucose will be checked every 6 hours and will be recorded on the blood glucose (BS) chart. If any complications are detected, the patient will be excluded from the study. Before the intervention, the NIHSS questionnaire will be recorded then one day, three days, seven days and one month, two months, and three months after the intervention will be followed up respectively.

Results: In the present study, according to the neuro-protective effects of metformin, there is a significant difference in metformin taking in the reduction of NIHSS Score in non-diabetic stroke patients. Regarding the analysis of the data, there is a significant association in metformin taking and decrease in NIHSS scores in cortical ischemic stroke patients.

Conclusion: According to the results, there were not a significant difference in NIHSS between the two case and control groups in the first, third and seventh days of cortical stroke. But there were a significant difference in NIHSS of both case and control groups in the first, second and third months, statistically. The results of this study showed that metformin reduced the severity and stroke symptoms and accelerated recovery and functional output in patients with cortical stroke after the first, second and third months.

Keywords: Metformin, Recovery, Complications, Stroke